Public Service Commission of Wisconsin
Direct Testimony of Amy E. Pepin
Gas and Energy Division

Wisconsin Public Service Corporation
Docket 6690-UR-124

September 2, 2015

Q. Please state your name, business address, and occupation.

A. My name is Amy E. Pepin and my business address is the Public Service Commission of Wisconsin (Commission), 610 N. Whitney Way, Madison, Wisconsin 53707. I am employed by the Commission as a Public Utility Financial Analyst in the Gas and Energy Division.

Q. Please describe your qualifications and work experience.

A. I graduated from the University of Wisconsin–Whitewater with a Bachelor of Business Administration degree. My majors were finance and economics. I began working for the Commission in 2008.

Q. What are your major job responsibilities?

A. I work with financial and economic issues in the gas and energy area. My major financial responsibilities include analyzing and processing securities applications and analyzing and recommending rate of return, capital structure, and interest rates for rate cases. I also provide economic expertise on a variety of subjects, including Strategic Energy Assessment, Risk Management, and construction cases.

Q. What is the subject of your testimony in this proceeding?

A. I will be presenting testimony on the return component of revenue requirement for Wisconsin Public Service Corporation (WPSC). This includes examination of the utility capital structure, the cost of debt, and the required return on common stock equity.

As part of this examination, I have prepared 2 exhibits. Ex.-PSC-Pepin-1 provides financial data related to WPSC's capital costs in the test year, and consists of 12 schedules. I also prepared a confidential exhibit, Ex.-PSC-Pepin-2c, which provides data related to off-balance sheet obligations. Ex.-PSC-Pepin-2c contains 4 schedules.

Q. Please summarize your testimony.

A. First, I discuss the adjustments that I made to WPSC's financial and regulatory capital structures. This includes an analysis of off-balance sheet obligations. Second, the historic and current financial market trends along with appropriate short-and long-term debt costs are discussed. Third is a discussion of the return on equity. WPSC has proposed a return on equity (ROE) of 10.20 percent, which is the company's currently authorized ROE. I estimate a range for the ROE of 9.8 percent to 10.2 percent, and instructed Commission audit staff to use 10.0 percent as the point estimate for calculating revenue requirement. Lastly, I rebut WPSC's financial witnesses.

Q. What procedure did you follow in estimating an overall cost of capital for WPSC?

A. The procedure involves several steps, the first of which is selecting an appropriate capital structure. The capital structure is the proportion of capital utilized in the corporation from common stock, preferred stock, and long- and short-term debt. The capital structure is significant with respect to the overall cost of capital and the ability of WPSC to hold and attract capital.

The second step is to estimate the cost levels of the various components of capital. In general, this step is designed to infer current investor expectations of capital costs for WPSC during the test year. The expected capital costs defined would fairly compensate WPSC for its interest costs during the test year and would provide WEC Energy Group,

WPSC's equity owner, with a return that fairly compensates for time preference and investment risk, and enables WPSC to preserve and attract capital in its long-term operations.

Specifically, this step first examines historical and recent trends in interest rates and electric utility capital market costs in an attempt to assess current investor expectations based solely upon the historical data. Further analysis involves examination of inflation and interest rate forecasts, theoretical capital cost projections and potential economic conditions to infer additional information regarding investor expectations. The final analysis requires an assessment of investment risk specific to WPSC during the test year and how that risk is factored into current investor expectations.

The final step is to calculate the weighted cost of capital, which I will develop in this testimony and the associated exhibit.

Capital Structure

Q. Would you explain Schedule 1 of Ex.-PSC-Pepin-1 with respect to the capital structure of WPSC?

A. The top portion of page 1 of Schedule 1 shows the utility regulatory, or rate-making, capital structure I estimated for the test year ending December 31, 2016. In this case, the utility capital structure consists of 50.46 percent common equity, 1.78 percent preferred equity, 45.22 percent long-term debt, and 2.53 percent short-term debt. The utility common stock equity was developed by removing from the utility's equity, as reported on its balance sheet, any non-utility investments on which ratepayers should not pay an equity return or other equity adjustments for ratemaking purposes. The adjustments may be positive or negative.

The bottom portion of page 1 shows the financial capital structure consisting of 51.00 percent common equity, 1.73 percent preferred equity, 44.05 percent long-term debt, 0.04 percent long-term debt of WPS Leasing, 0.72 percent debt equivalence for off-balance sheet obligations, and 2.47percent short-term debt. The inclusion of off-balance sheet obligations in the financial capital structure is consistent with the Commission's determination in docket 6690-UR-123.

Off-Balance Sheet Obligations

Q. Please discuss in general the imputation of debt equivalents for off-balance sheet obligations.

A. Few, if any, other regulatory commissions explicitly calculate an off-balance sheet debt equivalence and use that calculation in determining an appropriate capital structure. This Commission has devoted substantial efforts to measure the obligation and accurately moderate the utility's capitalization to maintain the appropriate financial leverage.

There are cost implications to protecting WPSC's credit in light of the off-balance sheet debt equivalent. For every dollar of off-balance sheet debt equivalent the company accepts, 51 cents[1] of rate-base related debt must be converted to equity. Since equity is more expensive than debt, this comes at a cost to ratepayers, as shown on page 2 of Schedule 1 of Ex.-PSC-Pepin-1. While it is appropriate that ratepayers compensate the investors for the additional equity needed to maintain financial health, the measurement of the risk is subjective, and ratepayers should not pay more than necessary.

Q. Please explain how you estimated the $21,131,385 of debt equivalent for off-balance sheet obligations.

[1] This amount varies by the amount of equity that the Commission targets for the financial capital structure.

A. I used an average estimated off-balance sheet debt equivalent in the financial capital structure, rather than the year-end estimated balance. This was done to put the off-balance sheet debt equivalent on a consistent basis with the other components of the financial capital structure. The off-balance sheet debt obligations for December 31, 2015, and December 31, 2016, were calculated and I used a simple average of the two in my proposed financial capital structure.

WPSC's calculation of off-balance sheet obligations is $25,143,614. The adjustments I made to the calculation are consistent with the Final Decision in 6690-UR-123. My calculations of the off-balance sheet debt equivalent are shown on Schedules 2 through 4 of Exhibit 2. To avoid the need to file both public and confidential testimony, I have moved the supporting arguments relating to my calculation to Schedule 1 of Confidential Ex.-PSC-Pepin-2c.

Q. Do you have any comments on Order Point 18 from the Commission's December 18, 2014, Final Decision in docket 6690-UR-123?

A. Yes. To help make more transparent the inputs and processes used by the financial markets in assessing the financial strength of Wisconsin utilities, the Commission has required that WPSC:

> submit, in its next rate case application, detailed information regarding all off-balance sheet obligations for which the financial markets will calculate a debt equivalent. The information shall include, at minimum: (1) the minimum annual lease and PPA obligations; (2) the method of calculation along with the calculated amount of the debt equivalent; and (3) supporting documentation, including all reports, correspondence, and any other justification that clearly established Standard & Poor's (S&P) and other major credit rating agencies' determination of the off-balance sheet debt equivalent, to the extent available, and publicly available documentation when S&P and other major credit rating agencies documentation is not available.

The Commission may wish to require WPSC to again file such financial information in the next rate case.

Equity Range, Target Equity Level, and Dividend Restrictions

Q. What is the current long-term range and target equity for WPSC's common equity?

A. The Commission, in docket 6690-UR-123, reaffirmed a long-term range of 49.0 percent to 54.0 percent common equity, on a financial basis, with a target equity level of 51.0 percent. Commission staff's test-year capital structure used 51.0 percent in the financial capital structure. However, the Commission may wish to consider lowering the range or target in light of increased customer charges. A 10 basis point change in ROE, from 10.00 percent to 9.9 percent, changes the weighted cost of capital on the financial capital structure from 7.42 percent to 7.37 percent. In order to change the capital structure to result in this weighted cost, instead of changing the ROE, the equity percentage would equal 50.03 percent, a 97 basis point reduction. My calculations are shown on page 3 of Schedule 1.

Q. Should the Commission establish parameters for rebalancing the financial capital structure after the decisions in this docket are incorporated?

A. Yes. In past test years, the capital structure for WPSC has been balanced with equity infusions from and special dividends to its parent company to maintain a test-year average equity near a target level within the approved range. Consequently, after the decisions of the Commission were incorporated into the test-year operations, WPSC's capital structure was balanced to ensure that the test-year equity was equal to the target percent. In addition, the Commission has limited the amount of equity infusion to the lesser of the amount needed to achieve a test-year average equity ratio, on a financial

basis, approximating the target level or the amount found not to result in cash or cash equivalent holdings. The Commission may wish to do so again.

Q. Did WPSC submit the 10-year financial forecast?

A. Yes. WPSC's 10-year financial forecast was filed on April 17, 2015, in Confidential PSC REF#: 23501. The Commission may wish to require WPSC to again file a 10-year financial forecast in its next rate case.

Q. Do you propose any changes to WPSC's dividend restriction?

A. In docket 6690-UR-123, the Commission adopted the following dividend restriction for WPSC:

> WPSC shall not pay, without Commission prior approval, normal dividends greater than 103.00 percent of the prior year's common dividend. WPSC shall notify the Commission if any special dividend is contemplated. No special dividend that might cause the common equity, on a financial basis, to drop below the projected calendar year average of 51.00 percent or the dollar amount of equity reflected in the test year is permitted without Commission approval.

The Commission may wish to change the wording of WPSC's dividend restriction, to conform to Wisconsin Electric Power Company (WEPCO) and Wisconsin Gas LLC's (WG) dividend restrictions. With the closing of Wisconsin Energy Group's (WEC) acquisition of Integrys Energy Group, WPSC is part of the same corporate entity as WEPCO and WG. For consistency with WEC's other utility subsidiaries, the Commission could revise WPSC's dividend restriction as follows:

> WPSC shall not pay dividends in excess of the amount forecasted in this proceeding if such dividends cause the average annual common equity ratio, on a financial basis, to fall below the test-year authorized level of 51.00 percent. WPSC shall not pay a special dividend in excess of the forecasted dividends at the end of the year unless the additional payment does not reduce the average annual common equity ratio, on a financial basis, below the forecasted level of 51.00 percent.

If the Commission determines that a different equity target is appropriate, the dividend restriction should be updated to reflect that change. Even if no changes are made, the Commission should reaffirm the dividend restriction in its Final Decision. The estimated amount of dividends in this proceeding is $118,500,000.

Short- and Long-Term Debt Costs

Q. What have been the long-term and recent trends in interest rates and utility borrowing costs?

A. Information about historical annual and monthly long-term and intermediate-term interest rates is presented on Schedules 2 and 3 of Ex.-PSC-Pepin-1. The data presented cover interest rates incurred on U.S. government debt instruments, and also specific interest rates incurred on debt instruments issued by public utility companies. The annual data listed covers the 30-year period 1985 through 2014. Yield spreads, or premiums, are also shown. They provide a measure of the risk premium required by debt investors for companies having financial characteristics that lead to lower bond ratings, and also outline compensation required by debt investors for default risk.

In general, as seen on page 3 of Schedule 2 and page 2 of Schedule 3, public utility debt costs have declined over the past 30 years.

Q. What are current default risk premiums required by investors in utility bonds?

A. Page 3 of Schedule 3 shows recent premiums for A-rated utility bonds over 10-year U.S. Treasury notes. Spreads are affected by changes in both U.S. Treasury note and utility bond yields. Consequently, recognition also needs to be given to any effects U.S. Treasury yields have on spreads. An increased spread could be caused by a flight of

investment to U.S. Treasury securities rather than an increase in investor-required utility bond yields.

Q. What has been the recent trend in short-term interest rates?

A. Schedule 4 of Ex.-PSC-Pepin-1 lists recent values for the prime lending rate, commercial paper, and London interbank offered rates (LIBOR). Commercial paper rates during the first week of August traded at 0.10 percent to 0.26 percent, while the prime interest rate was 3.25 percent, and LIBOR rates were at 0.19 percent to 0.31 percent.

Q. How do current and forecasted rates of inflation compare to levels experienced historically?

A. Schedule 5 of Ex.-PSC-Pepin-1 provides historical and projected inflation rates as measured by changes in the Consumer Price Index. The schedule shows the annual inflation rates from 1964 through 2014. The historical data is important to the extent investors use it in forming expectations of capital costs over the test-year period. Inflation projections for 2015 and 2016 from *The U.S. Economic Outlook* (Global Insight), and from *Blue Chip Economic Indicators*, and my inflation estimates are also shown. I expect inflation rates to be 0.00 percent for 2015 and 2.10 percent for the test year.

Q. Have you reviewed any forecasts of interest rates for the test year?

A. Yes. Schedule 6 of Ex.-PSC-Pepin-1 shows interest rate forecasts, which I reviewed in estimating WPSC's cost of capital for the test year. Two different forecasts are presented. First, data from the June 2015 *Blue Chip Financial Forecasts* is provided. That forecast was used in preparing the estimates for test-year capital costs, which were provided to Commission auditors in this case. Second, data from the September 2015

Blue Chip Financial Forecasts is presented to provide a more current outlook. Forecasted interest rates have stayed about the same since the June forecasts. The averages for the test year have increased slightly, but this largely appears to be the result of the forecasts increasing during the test year, and fourth quarter estimates not being available in June.

Q. Based on the interest rate forecasts, what is your estimation for a short-term debt rate for WPSC in the test year?

A. Based on the data available in June, I instructed Commission staff to use 1.60 percent for the commercial paper rate on short-term debt. The proposed Commission staff revenue requirement incorporates that estimate. Commission staff's 1.60 percent compares to the 1.99 percent used by WPSC.

WPSC's commercial paper has been rated "A-2" by S&P and "P-2" by Moody's. This Commission's practice has been to use the *Blue Chip Financial Forecasts* commercial paper rate forecasts, which reflect A-1/P-1 rated commercial paper rates, for determining the test-year commercial paper rate. Based on the June 2015 *Blue Chip Financial Forecasts*, a reasonable estimate for A-1/P-1 rated commercial paper for test-year 2016 is approximately 1.20 percent. Page 2 of Schedule 6 shows the A-1 and A-2 rated commercial paper rates since September 2007. The spread between A-1/P-1 rated and A-2/P-2 rated commercial paper varies and has been as low as six basis points during this period. As seen on page 2, commercial paper rates have been declining as the Federal Funds Rate has declined. The rates had declined to approximately 2.00 percent for A-1/P-1 rated commercial paper and 3.00 percent for A-2/P-2 rated commercial paper just prior to the September 2008 market disruption. The A-1/P-1 and A-2/P-2 rated

commercial paper rates had declined to approximately 0.15 percent and 0.35 percent, respectively, by fall 2009, and have remained at approximately the same levels since. The spread between A-1/P-1 and A-2/P-2 has averaged approximately 40 basis points in 2015 through June 9, 2015. Using a spread of 40 basis points, I estimate the short-term debt rate to be 1.60 percent for the test year.

Updated market information will be provided through a delayed exhibit filed approximately six days before the Commission discussion of the record to assist the Commission in making a final determination of test-year short-term debt cost.

Q. What is the embedded cost of long-term debt capital of WPSC for the purposes of this proceeding?

A. The composite cost of embedded long-term debt for WPSC is 4.81 percent. The average forecasted amount of long-term debt outstanding is $1,300,100,000 for the test year. The embedded long-term debt includes a $250,000,000 issuance of long-term debt at an estimated cost of 5.0 percent. Page 3 of Schedule 6 provides calculations of forecasted yield for the $250,000,000 issuance. The forecast is based on current yields on Wisconsin utility long-term debt and a forecast of expected changes in current bond yields. Commission staff's estimate of 5.0 percent compares to WPSC's forecast of 4.30 percent.

Updated market information will also be provided at the time of discussion of the record to assist the Commission in making a final determination of estimated costs. The issuance may occur prior to the Commission's decision, in which case, an actual interest rate can be used.

Return On Equity

Q. Please describe how you estimated the appropriate return on equity for WPSC.

A. In estimating the expected test-year equity cost, I took into consideration various theoretical relationships that provide information regarding the equity return expected by investors in the company's common stock. I also considered current and expected interest rates, the expected investment risk associated with holding the company's securities during the test-year period, and the overall state of the economy.

Q. What information did you use in estimating the appropriate return on equity for WPSC?

A. I used Commission staff's discounted cash flow (DCF) analysis of a large portfolio of energy utility stocks and a DCF analysis of low-risk non-utility stocks.[2] The DCF analysis was performed as of May 29, 2015, using the two portfolios and general method developed in Commission staff's 2003 report, entitled *Consensus Estimates of Equity Investors' Required Returns: Regulatory Implications* (Commission Staff's Required Return Report). The results of these analyses are shown on Schedule 7 of Ex.-PSC-Pepin-1. Furthermore, I have provided an Interest Rate Premium Model. The results of this analysis are shown on Schedule 8 of Ex.-PSC-Pepin-1. Lastly, I reviewed the calculations performed by WPSC.

The Commission has indicated that market models should not be applied mechanistically, but that they should be used as one piece of information in determining the appropriate return on equity. Furthermore, it is my opinion that the proper use of capital cost models requires an examination of the assumptions necessary for the modeled theoretical relationships to hold. In cases where the assumptions seem unrealistic, the model results should be interpreted accordingly. An attempt should be made to identify

[2] It should be noted that while the Commission staff performs a DCF calculation on a sample of low-risk non-utility stocks, the analysis is not an indication that the sample is representative of utility stocks. Contrarily, the analysis was initially performed to show that the samples are different.

assumptions necessary to estimate input parameters of the models, and the appropriateness of those assumptions should be evaluated.

An analysis was also performed on the capital cost models provided by the company. The discussion of this analysis later in my testimony will provide the Commission with additional information.

Q. Please discuss the DCF models underlying the returns in Schedule 7.

A. The DCF model begins with the principle that the current value of an investment should be equal to the discounted value of future cash flows to be received from that investment. From a theoretical perspective, it relies upon a relatively straightforward concept that applies to most investment types, and across all industries. An investor knowing the current dividend, the rate of growth for the dividend, and his or her required return, can calculate the price at which he or she will purchase the security. The model can be described as follows:

$$P_0 = D_0 + \frac{D_0(1+g)^1}{(1+r)^1} + \frac{D_0(1+g)^2}{(1+r)^2} + \frac{D_0(1+g)^3}{(1+r)^3} + \cdots + \frac{D_0(1+g)^\infty}{(1+r)^\infty}$$

P_0= current stock price

D_0= current dividend payment

g= dividend growth rate

r= required return on equity

Conversely, knowing the purchase price of the security, its current dividend, and the rate of growth of the dividend, an investor can calculate the required return.

A DCF model's growth rate can be based on dividend growth rates or earnings growth rates. The DCF can be based on a constant growth model, where it is assumed that the current growth rate would continue indefinitely, or use multiple stages, which

recognize that the current growth rate may not be obtainable indefinitely or that the growth rate may currently be adversely affected.

Q. What discounted cash flow models did you use for Schedule 7?

A. The data shown in Schedule 7 is based on earnings growth. The results are from a single-stage DCF model and two 2-stage models. The 2-stage models assume that the current earnings growth rate continues for 5 and 10 years, respectively, and then reverts to the long-term terminal growth rate, which is 5.50 percent for the non-utility portfolio and 2.50 percent for the utility portfolio. The 2.50 percent represents the long-term inflation rate forecast and the 5.50 percent represents the nominal long-term growth rate for the economy.

Q. What are the results of the DCF calculation?

A. As shown on page 2 of Schedule 7, the DCF results for energy utilities using the two-stage models range from 6.70 percent to 7.10 percent. The DCF result for the one-stage DCF is 8.85 percent. Pages 4, 5, and 6 of Schedule 7 show the monthly, 6-month average, and 12-month average DCF result for the last 12 years.

Q. Did you perform any sensitivity analysis on the DCF model?

A. Yes. The selection of the terminal growth rate is important. I used the 5.50 percent growth rate used for the portfolio of low-risk non-utility stocks. The DCF results for the two-stage DCF models range from 9.21 percent to 9.28 percent. Furthermore, I calculated the growth rates necessary to produce a return of 10.0 percent, which is my point estimate for return on equity in this proceeding. For the two-stage models, a long-term growth rate range of 6.32 percent to 6.56 percent is necessary to support a 10.0 percent required return while for

the one-stage DCF model, a growth rate of 6.11 percent is necessary. The results of the sensitivity analysis are shown on page 3 of Schedule 7.

Q. What return on equity estimates does your interest rate premium model show?

A. Schedule 8 contains Commission return on equity decisions for WPSC since 1987. This table contains, for the various WPSC rate cases, the common equity return granted, the amount of common equity in the utility capital structure, and the interest rate data on the 30-year U.S. Treasury bond, 10-year U.S. Treasury note, and AA-rated utility bond for the month in which the Commission made its decision on rate of return.

Schedule 8 shows that the premium that WPSC common equity has received has averaged about 558 basis points over the 30-year U.S. Treasury bond yields, 653 basis points over the 10-year U.S. Treasury note yields, and 468 basis points over the AA-rated utility bond yields. Since 1987, WPSC's interest premium has ranged from 270 basis points to 716 basis points over 30-year U.S. Treasury bond yields, 354 basis points to 810 basis points over U.S. Treasury note yields, and 222 basis points to 611 basis points over AA-rated utility bond yields.

Q. Are there any caveats concerning the results in Schedule 8?

A. Yes, I have two caveats. First and most importantly, the estimated returns are based on premiums over debt securities relative to past Commission authorized returns. These premiums are not necessarily reflections of market required premiums, only reflections of the premiums based on past Commission decisions.

Second, to best match the Federal Reserve's available forecast data, I used the 30-year U.S. Treasury bond. The 30-year U.S. Treasury bond yields were not available

for the period March 2002 through January 2006. Consequently, five of the Commission decisions do not have interest premium calculations for the 30-year bonds.

Q. What rates of return has the Commission awarded in recent years for large investor-owned utilities?

A. Results of Commission orders with respect to cost of capital and rates of return from 1990 to the present time, for major Wisconsin utilities, are summarized on Schedule 9 of Ex.-PSC-Pepin-1.

Q. What have been the returns authorized by other state utility commissions?

A. Schedule 10 of Ex.-PSC-Pepin-1 provides data on the average regulatory allowed returns for electric utilities and natural gas utilities since 1984. It also shows the equity levels included in the regulatory capital structures on which the returns were applied. For 2014, the average authorized return for electric and natural gas utilities were 9.92 percent and 9.78 percent, respectively.

Q. What factors do you believe should be considered in assessing the test-year equity cost for WPSC?

A. Data on recent historical interest and inflation rates and current forecasts of interest and inflation rates continue to suggest that capital costs have remained relatively low. Capital costs rose during the 2008 market disruption, but have been declining since early 2009. Inflation rates are forecasted to be minimal this year, and near 2.00 percent in the test year.

The June interest rate premium models on Schedule 8 suggest a range of returns of 9.14 percent to 9.84 percent. Analysis of energy utility stocks in the DCF approach as of May 29, 2015, estimates a required return range of 6.70 percent to 8.85 percent. The

returns indicated by the DCF model have increased slightly since the time of the Commission's decision in docket 6690-UR-123, WPSC's last rate case.

Q. How do higher customer charges affect the required return?

A. In docket 6690-UR-123, the Commission authorized significantly higher customer charges for WPSC. The company has proposed to increase the customer charges again in this case. As more revenue is collected through fixed charges such as customer charges, rather than variable charges, financial risk decreases, and required return also declines. In addition, having annual rate cases decreases the variability in earnings because estimates are updated more often to reflect actual conditions. Bond investors receive a fixed interest payment for their investment. As more revenues are collected through fixed charges, equity investors can be more certain of their returns, and a comparison could be made to the fixed nature of a bond investment.

Q. What analysis have you done regarding fixed and variable revenues and their effect on the required return?

A. Commission staff has calculated the amount of revenue that is forecasted to come from fixed charges. Schedule 12 of Ex.-PSC-Pepin-1 shows the amount of revenues forecasted to come from fixed charges, under both WPSC's and Commission staff's proposed level of fixed charges. WPSC's forecast for the test year shows 16.93 percent of its revenues coming from fixed charges, which compares to Commission staff's estimate of 13.78 percent. I also included the demand charges as fixed in one of the examples because these revenues do not fluctuate much, if at all. I then calculated a risk adjustment based on allowing a full equity return on the portion of revenues that are not fixed, and applying a lower rate to the fixed portion. Page 2 of Schedule 12 shows the

weighted cost of equity using both WPSC's and Commission staff's fixed charges, and using the short-term debt rate, long-term debt rate and the weighted average cost of capital for the fixed revenue portion. Again, demand charges are included in one of the examples. The risk adjustments are shown in the following table.

Potential ROE Adjustments for Different Levels of Fixed Charges			
	WPSC fixed charges	**Commission staff fixed charges, including distribution demand**	**Commission staff fixed charges, excluding distribution demand**
Using Short-term Debt Rate	-1.42%	-1.34%	-1.16%
Using Long-term Debt Rate	-0.88%	-0.83%	-0.72%
Using Weighted Cost of Capital	-0.43%	-0.40%	-0.35%

The calculation uses my point estimate ROE of 10.0 percent. If WPSC's requested ROE of 10.2 percent is used in the calculations instead of Commission staff's point estimate, the results are approximately 3 basis points higher, as shown on page 2 of Schedule 12. WPSC's debt rate was used, rather than a Treasury rate, because it accounts for company-specific risk. The data on Schedule 12 is subject to change, based on the Commission's decisions on various other issues in this case.

The Commission may wish to make an adjustment to ROE for the lower risk associated with WPSC's higher fixed charges. It makes sense to use the long-term debt rate because, in general, the company's fixed costs are long-term in nature. If the Commission wants to make a more gradual adjustment, the weighted average cost of capital could be used, to moderate the impact of this adjustment. For example, if the Commission selected 10.0 percent as the authorized ROE, and wants to make a risk adjustment based on the weighted cost of capital, using Commission staff's level of fixed charges, excluding distribution demand, the effective ROE would be 9.65 percent

(10.0 percent less 0.35 percent). This adjustment could be calculated using the specific numbers the Commission decides on in this case.

Q. What might the Commission consider for a reasonable allowed rate of return on utility common equity for WPSC in the test year?

A. Based on the economic information available in June, the above considerations, and prior Commission decisions for WPSC, the Commission may wish to consider a range of 9.80 percent to 10.20 percent to be reasonable for the allowed return on equity for WPSC in the test year. This range is for the base ROE; an additional adjustment could be applied, which may result in the adjusted ROE being outside of this range. I instructed Commission staff to use 10.00 percent as the point estimate for calculating revenue requirement.

This range produces interest premiums of 623 to 663 basis points above the forecasted 30-year U.S. Treasury bond yield, 690 to 730 basis points above the forecasted 10-year U.S. Treasury note yield, and 464 to 504 basis points above the forecasted AA-rated utility bond yield. Updated models will be provided at the time of the discussion of the record to assist the Commission in making a final determination.

Q. Please describe Schedule 11 of Ex.-PSC-Pepin-1.

A. The top portion of Schedule 11 contains calculations of the weighted cost of capital and economic cost of capital. The weighted cost of capital and economic cost of capital, assuming a 10.0 percent return on equity are 7.30 percent and 10.75 percent, respectively, for WPSC.

The bottom portion shows the times interest coverage using the various cost estimates and the indicated financial capital structure. This schedule contains a sensitivity analysis with respect to return on equity by using the proposed range of

9.80 percent to 10.20 percent. A return of 10.0 percent on common stock equity would result in times interest coverage of 5.06 before taxes.

Q. Should the Commission take notice of long- and short-term interest rates at the time of its discussion of the record in this case?

A. Yes. Conditions in the financial markets are dynamic, and could change between now and the time of the Commission discussion of the record. To reflect potential changes, updated financial data including actual and forecasted interest rates and market model results will be provided to the Commission at the time of its discussion of the record in this case. Therefore, I will submit a delayed exhibit approximately 6 days before this docket is discussed by the Commission. The delayed exhibit will include, at minimum, updates to Schedules 1 through 10.

Rebuttal to Direct Testimony of WPSC's Financial Witnesses

Q. Please comment on the business risk associated with WPSC's customer mix.

A. WPSC witness Paul Moul states on page 2 of his direct testimony that, "Thus, the Company's retail electric sales are dominated by riskier commercial and industrial sales." An alternate perspective is provided by S&P's in its April 8, 2014, credit report. It states, "the customer base is predominately residential and commercial, which limits susceptibility to economic cyclicality and provides relatively stable cash flows."[3]

For 2014 electric sales, WPSC reported in its annual report to the Commission approximately 390,000 residential customers generating $366,400,000 of operating revenues (31 percent), 55,000 small commercial customers generating $366,500,000

[3] PSC REF#: 201919.

(31 percent), and 259 industrial customers generating $241,900,000 (21 percent). Sales for Resale was approximately $200,500,000 (17 percent).

Q. Please comment on the issue of circularity discussed by Mr. Moul on lines 18 through 23 of Direct-WPSC-Moul-16.

A. Mr. Moul concludes from his discussion that due to circularity, the DCF model may not fully reflect the true risk of a utility. In 1991, the New York Public Utility Commission decided to re-evaluate techniques for estimating a firm's cost of capital. Stewart C. Meyers[4] and Lynda S. Borucki [5]addressed the DCF methodology and noted the following on circularity:

> Appling the DCF method solely to Utility X also falls into a trap of regulatory circularity….So the DCF method applied to Utility X alone has regulators looking to investors to determine what they think regulators will do….Calculating a benchmark cost of equity for comparable utilities in different regulatory jurisdictions escapes the circularity.

The DCF methodology is the most commonly used methodology in estimating return on equity for regulated utilities.

Q. Please comment on WPSC's DCF methodology.

A. Mr. Moul makes a leverage adjustment to his DCF model. He argues that an adjustment is needed to account for the fact that rates are set based on the book value rather than the market value. The Commission has traditionally not made adjustments based on differences between the market and book capitalizations. Typically, the market capitalization has contained more equity than the book capitalization. This does indicate that the market valuation is less risky than the book capitalization, but it also indicates

[4] The then Gordon Y. Billard Professor of Finance at the Massachusetts Institute of Technology's Sloan School of Management, and the Director of MIT's International Financial Services Research Center.
[5] Then an Associate at The Brattle Group, an economic, management and environmental consulting firm.

that investors are willing to pay a premium for the stock. It is an indication that the potential return from the investment (which is made on a market basis) is higher than what the investor requires in order to make the investment. Also, the analyst forecasts that are used in the DCF model account for capital structure. Analysts are aware of the differences between the market and book capitalizations, and that authorized returns are traditionally set on the book values.

Q. Do you have any comments on risk premium estimates in general?

A. Yes. This Commission's standard models have not historically included risk premium estimates. Estimates are often based on actual earned returns, which may not reflect returns required by investors. A willingness to assume that average earned spreads equal average required risk premiums is necessary. Care must also be given to the period(s) selected.

Q. Do you have any general comments about the Capital Asset Pricing Model (CAPM)?

A. The CAPM is a widely used model, and from a theoretical perspective, makes intuitive sense. According to Eugene Fama and Kenneth French's *The Capital Asset Pricing Model: Theory and Evidence*:

> Unfortunately, the empirical record of the model is poor – poor enough to invalidate the way it is used in applications. The CAPM's empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model.
>
> …In the end, we argue that whether the model's problems reflect weaknesses in the theory or in its empirical implementation, the failure of the CAPM in empirical tests implies that most applications of the model are invalid.

There is still significant disagreement over variables such as the appropriate beta, market return, whether the traditional CAPM or the newer Empirical CAPM (ECAPM) model

should be used, appropriate slope correction if the ECAPM is used, and whether a size premium is appropriate. Furthermore, as with other risk premium models, the premium calculation is subject to great debate. This Commission's standard model no longer includes a CAPM calculation.

Q. Do you have any comments on specific aspects of Mr. Moul's CAPM analysis?

A. Yes. Mr. Moul adjusts the value line betas for the market capitalization of his combination group. For reasons discussed earlier, I do not agree with this adjustment.

Q. Does this conclude your direct testimony?

A. Yes, it does.

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